



# Establishing UNISEC-Egypt:

## Space Engineering Education in Egypt

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# Outline

- **History.**
- **CanSat Training (CLTP, CLP).**
- **Activities Timeline.**
- **Major Outcomes.**
- **Students Achievements.**
- **UNISEC-EGYPT.**
- **The Future.**

Space Systems Technology Laboratory



# HISTORY

- **Space Education at Cairo University starts officially in 1990 when the department changed from *Aeronautical Engineering* to *Aerospace Engineering*.**
- **Space Education has a boost around 1994, with the establishment of "Egypt's National Authority for Remote Sensing and Space Sciences".**
- **Around year 2000, Prof. Sayed Desoky contacts his colleague from Stanford Prof. Twiggs who offers visiting Egypt and teaching us CANSAT technology.**
- **Unfortunately, the offer was rejected by Egyptian Authorities!**

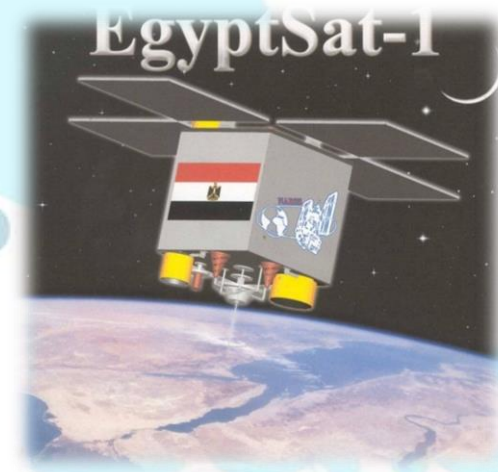


# HISTORY

- A remote sensing satellite EgyptSat1 (165Kg, 7.8 m resolution) program started as a cooperation with the Ukraine and was launched on 17<sup>th</sup> April 2007.
- A team of Aerospace engineers, under the supervision of Aerospace department faculty members, has joined EgyptSat 1 development.
- Different space courses (graduate and undergraduates) where offers through this period such as:
  - Attitude Dynamics and Control , Mission analysis, orbital Dynamics, Space Structures, Space propulsion, etc.

# HISTORY

- Different graduation projects were also executed such as:
  - Moon-Sun Sensor, Gas propulsion thrusters, Solar Cells cruse sun-sensor, Mission Analysis software, Orbital propagator, etc.
- More than 10 master and Ph.D. theses were conducted.
- After stopping of satellite program, space education and research slowed down till three faculty members joined The Japanese Cansat Leader Training Program CLTP.



# CLTP

1 Participant from Egypt in CLTP1

2 Participants in CLTP3 •

Total of 3 Participants in CLTP •

Cansat Leadership  
**CLTP**  
Training Program



# First CanSat Training Program (CTP1)



2011

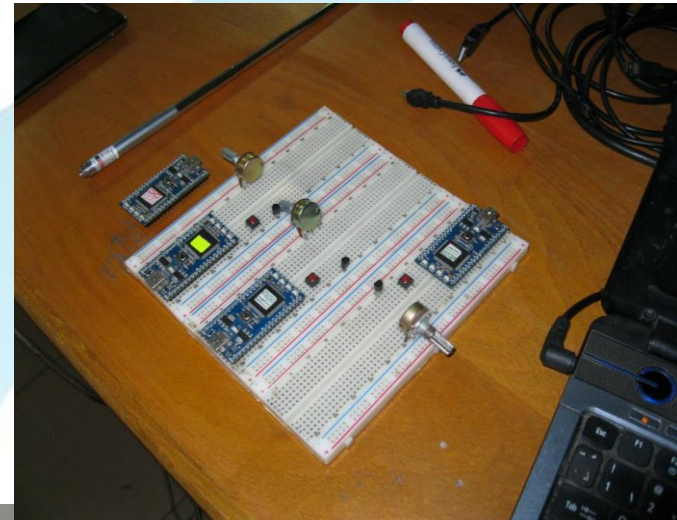
# Second CanSat Training Program (CTP2)



2012



# Third CanSat Training Program (CTP3)



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2013

# Fourth CanSat Training Program (CTP4)



# 2011 Activities Timeline



# 2012 Activities Timeline

MIC2 Seminars



TEDx Show



CLTP3 Start

Application Deadline  
For CLTP3

Application  
Deadline for MIC2



CTP-II



AUC Students Competition



Seminar and Panel  
Discussion about  
Establishing  
UNISEC-Egypt



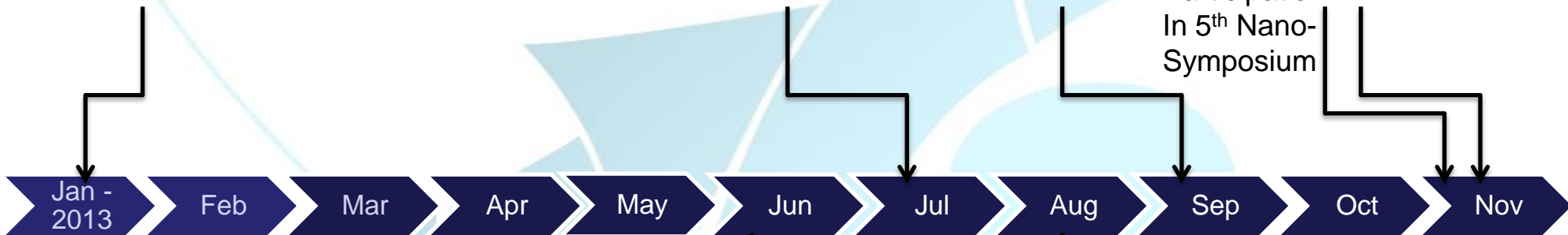
Participation in EED-12



# 2013 Activities Timeline



CTP3



Participation Siemens-Middle east competition

Participation in UN Symposium in Daubi

Participation in PreMIC3

Participation In 5<sup>th</sup> Nano-Symposium

Jan - 2013

Feb

Mar

Apr

May

Jun

Jul

Aug

Sep

Oct

Nov

Participation in RAST 2013 Symposium in Istanbul

Three capstone projects Affiliated to SSTLAB

Participation in EED 2013

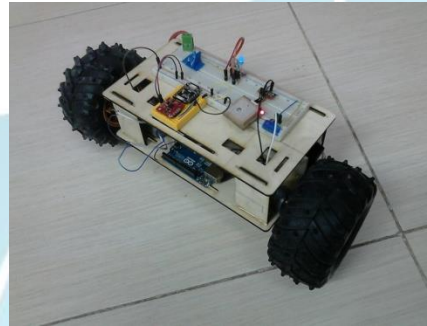
Iran Int'l Cansat Competition ICC2013



# 2014 Activities Timeline

Two capstone projects

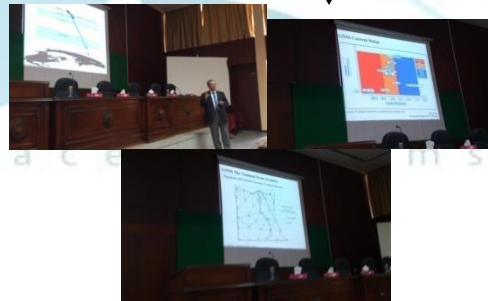
Seminar on requirements for supporting space tech (I).



Participating in the second UNISEC global meeting



CTP4



Seminar on requirements for supporting space tech (II).



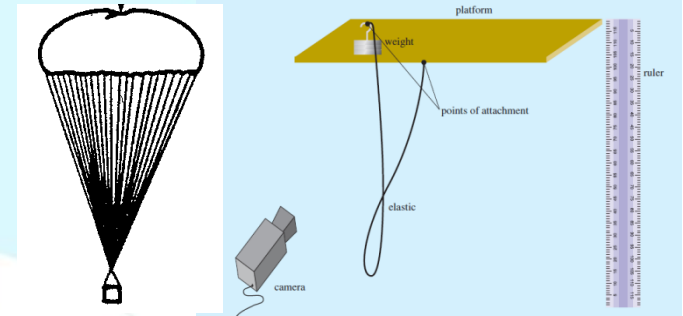
Participating in URC



Participating in ARLISS 2014

# Major Outcomes

- CanSat allows introducing interesting teaching modules with more design and hardware contents.



- We start getting the best Engineering students in Egypt after changing the stereotype idea of:  
*“Aerospace students are book worms and never have fun”*

# Major Outcomes

- Advanced Graduation projects:
  - Students get more acquainted with electronics (microcontroller, sensors).
  - They start working on more advanced topics and trying new ideas



**Rover Back CanSat**



**BBM CubeSat**



**Octocopter**



# Students Achievements

2011

2012

2013

2014



**EED – 1<sup>st</sup> Place**



**EED – 1<sup>st</sup> Place**



**EED– 1<sup>st</sup> Place**



**Achieving the 9<sup>th</sup> place  
over other 31 teams**



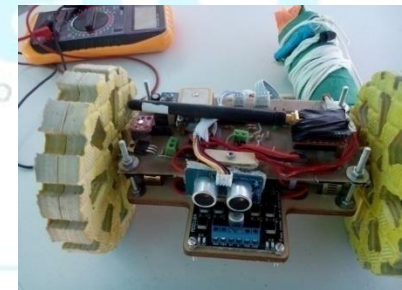
**AUC– 1<sup>st</sup> Place**



**3<sup>rd</sup> IRAN INT'L  
CANSAT COMP.  
7<sup>th</sup> Place From 150**



**EED**



**Participating in ARLISS 2014**

# Outreach

- PortSaid TEDx Session (2012).



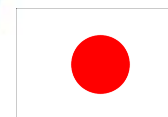
- Several TV shows. (2012-2013).



# UNISEC-EGYPT



## Seminar and Panel Discussion about establishing UNSEC-Egypt (July 4, 2012)



# UNISEC-EGYPT

During the first meeting it was agreed that:

- Mailing list was established to disseminate important information.
- To hold a second workshop in 2013 to allow each institute to present its capability.
- Explore the legal issues related to establish NGO UNSEC-EGYPT.
- Due to the current political situation things delayed.
- We are aiming at Alexandria university (the second top university in Egypt after Cairo University)

# ESTABLISHING UNISEC-EGYPT

## 1) Challenges in establishing UNISEC in Egypt?

- Political instability.
- Difficulty in funding.
- Lack of managerial staff.
- Limited institutions that conduct research and development for space systems.

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## 2) What would be the opportunities in having UNISEC in your region?

- It makes it possible for us to catch up with the advanced world in space research.
- Sharing in UNISEC activities will expand space knowledge in the region and give us the needed publicity.
- We hope that belonging to an international organization will give us some edge in asking for governmental funds (not successful yet!).
- It is a wakeup call for the government to start supporting space research.

# Possible Contribution to UNISEC-Global After Becoming a Member

- Participating in MIC competition.
- Participating in CLTP.
- Sharing in any new activities initiated by UNISEC-Global or any UNISEC chapter

**SST Lab**  
Space Systems Technology Laboratory

# Future Plan

- **Continuing CanSat Education (CTP5).**
- **Competing nationally and internationally (EED, ARLISS, MIC, etc.).**
- **CubeSat (moving to engineering Model).**
- **Blending with Egypt's space research plan and cooperating with different Egyptian research institutions such as NARSS and Ministry of scientific research.**



# Thank you

# Ready for Questions



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